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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,896	03/30/2004	Wayne H. Byrne	PU2205	2895
23454	7590	12/29/2005	EXAMINER	
CALLAWAY GOLF COMPANY 2180 RUTHERFORD ROAD CARLSBAD, CA 92008-7328			ABRAMOWITZ, HOWARD E	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/708,896	BYRNE ET AL.	
	Examiner	Art Unit	
	Howard E. Abramowitz	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/30/04</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-14, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairweather (Transactions, 75 (1997) 113) in view of Saeki (US Patent No. 5,207,427) in view of Dekura (US Patent No. 5,538,246) in view of Parker et al. (US Patent No. 3,887,732).

Referring to claim 1, Fairweather discloses a method for coating a magnesium alloy comprising the steps of, exposing the surface to an alkaline solution, while the pH is not disclosed Fairweather teaches that the particulars of the exposure were non-

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critical (page 113 column 2). The claimed range of the pH is 8-15, which encompasses almost the entire alkaline pH range. The method of Fairweather used a commercial alkaline cleanser which has a range of operating concentrations (PMD UK LTD PROCESS DATA) which would obviously fall into the claimed range do to its breadth. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a pH in the range of 8-15 when forming an alkaline solution as this broad range would encompass the suggested concentrations of the commercial solution. Next the magnesium alloy is acid etched in chromic acid, then it is exposed to a bi-fluoride activating solution (page 114 column 2). Then it was exposed to an electroless Nickel deposition step where a 15 micron layer was applied (the combination of the 5 and 10 micron layer coatings), followed by a 20 micron nickel layer deposition (page 117, column 2). It does not teach applying a chrome layer over the Nickel layers, or that the piece of magnesium alloy would be useful in a golf club head, or to heat treat the coated material. However, Saeki teaches that applying a chromium layer over a nickel coated body (golf club head) acts to reduce the amount of rusting that occurs when the head is exposed to harsh conditions (column 4 lines 23-40). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather to add a chromium layer as suggested by Saeki with an expectation that it will reduce the formation of rust. While the exact thickness of the chromium plating is not disclosed it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the values of the thickness into the claimed ranges so as to achieve the maximum amount of protection

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especially in the absence of a showing of criticality in using the claimed ranges. Also Fairweather does not disclose using a magnesium alloy material for a golf club head, however, Dekura teaches that magnesium alloy golf club heads provide a high moment of inertia (column 1 lines 51-67). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather for use as a golf club head as suggested by Dekura with an expectation that the golf club head will have a high moment of inertia. Fairweather finally is lacking the step of a heat treatment following the deposition. However, Parker et al teaches that heating Nickel coatings for 1 hour at 475 degrees Fahrenheit will help relieve residual stress in the coating (column 10 lines 1-10). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather to incorporate a heat treatment step as suggested by Parker et al. with an expectation that it will reduce stress. While the heat treatment method of Parker et al. is applied to a Ni coating without any further coating processes applied it would have been obvious to one of ordinary skill in the art that the heat treatment method could be applied either prior to or after the chromium protection layer application.

Referring to claim 2, Fairweather discloses that the bi-fluoride is ammonium fluoride (page 114 column 2).

Referring to claim 3, the commercial alkaline solution's instructions say to use it at 50-90 degrees Celsius (PMD (UK) LTD process data).

Referring to claim 4, Fairweather discloses that the bi-fluoride activator solution was run at 75-77 degrees Celsius (p 114 column 2).

Referring to claim 5, Fairweather discloses the bi-fluoride activator solution is used for 5-10 minutes (p 114 column 2)

Referring to claims 7-9, Saeki discloses that the coating can be applied to the entire surface of the club head or to any portion of the club head including the sole. While an aft-body is not specifically disclosed it would be obvious that if any portion of the head could be coated that an aft body would be encompassed by this (column 4 lines 51-56).

Referring to claim 10, Fairweather discloses a method for coating a magnesium alloy comprising the steps of, exposing the surface to an alkaline solution, while the pH is not disclosed Fairweather teaches that the particulars of the exposure were non-critical (page 113 column 2). The claimed range of the pH is 12-14. The method of Fairweather used a commercial alkaline cleanser which has a range of operating concentrations (PMD UK LTD PROCESS DATA) which would obviously fall into the claimed range due to its breadth. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a pH in the range of 12-14 when forming an alkaline solution as this broad range would encompass the suggested concentrations of the commercial solution. Next the magnesium alloy is acid etched in chromic acid, then it is exposed to a bi-fluoride activating solution (page 114 2<sup>nd</sup> column). Then it was exposed to an electroless Nickel deposition step where a 15 micron layer was applied (the combination of the 5 and 10 micron layer coatings), followed by a 20 micron nickel layer deposition (page 117, column 2). It does not teach applying a chrome layer over the Nickel layers, or that the piece of magnesium alloy



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would be useful in a golf club head, or to heat treat the coated material. However, Saeki teaches that applying a chromium layer over a nickel coated body (golf club head) acts to reduce the amount of rusting that occurs when the head is exposed to harsh conditions (column 4 lines 23-40). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather to add a chromium layer as suggested by Saeki with an expectation that it will reduce the formation of rust. While the exact thickness of the chromium plating is not disclosed it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the values of the thickness into the claimed ranges so as to achieve the maximum amount of protection especially in the absence of a showing of criticality in using the claimed ranges. Also Fairweather does not disclose using a magnesium alloy material for a golf club head, however, Dekura teaches that magnesium alloy golf club heads provide a high moment of inertia (column 1 lines 51-67). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather for use as a golf club head as suggested by Dekura with an expectation that the golf club head will have a high moment of inertia. Fairweather finally is lacking the step of a heat treatment following the deposition. However, Parker et al teaches that heating Nickel coatings for 1 hour at 475 degrees Fahrenheit will help relieve residual stress in the coating (column 10 lines 1-10). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather to incorporate a heat treatment step as suggested by Parker et al. with an expectation that it will reduce stress. While the heat treatment method of Parker

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et al. is applied to a Ni coating without any further coating processes applied it would have been obvious to one of ordinary skill in the art that the heat treatment method could be applied either prior to or after the chromium protection layer application.

Referring to claim 11, Fairweather discloses that the bi-fluoride is ammonium fluoride (page 114 column 2).

Referring to claim 12, the commercial alkaline solution's instructions say to use it at 50-90 degrees Celsius (PMD (UK) LTD process data).

Referring to claim 13, Fairweather discloses that the bi-fluoride activator solution was run at 30 degrees Celsius (p 114 column 2).

Referring to claim 14, Fairweather discloses the bi-fluoride activator solution is used for between 5 seconds and 10 minutes (p 114 column 2)

Referring to claims 16-18, Saeki discloses that the coating can be applied to the entire surface of the club head or to any portion of the club head including the sole. While an aft-body is not specifically disclosed it would be obvious that if any portion of the head could be coated that an aft body would be encompassed by this (column 4 lines 51-56).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fairweather in view of Dekura in view of Parker et al..

Referring to claim 19, Fairweather discloses a method for coating a magnesium alloy comprising the steps of, exposing the surface to an alkaline solution, while the pH is not disclosed Fairweather teaches that the particulars of the exposure were non-



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critical (page 113 column 2). Next the magnesium alloy is acid etched in chromic acid, then it is exposed to a bi-fluoride activating solution (page 114 2<sup>nd</sup> column). Then it was exposed to an electroless Nickel deposition step where a 15 micron layer was applied (the combination of the 5 and 10 micron layer coatings), followed by a 20 micron nickel layer deposition (page 117, column 2). It does not teach that the piece of magnesium alloy would be useful in a golf club head, or to heat treat the coated material.

Fairweather does not disclose using a magnesium alloy material for a golf club head, however, Dekura teaches that magnesium alloy golf club heads provide a high moment of inertia (column 1 lines 51-67). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather for use as a golf club head as suggested by Dekura with an expectation that the golf club head will have a high moment of inertia. Fairweather finally is lacking the step of a heat treatment following the deposition. However, Parker et al teaches that heating Nickel coatings for 1 hour at 475 degrees Fahrenheit will help relieve residual stress in the coating (column 10 lines 1-10). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fairweather to incorporate a heat treatment step as suggested by Parker et al. with an expectation that it will reduce stress.

Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairweather in view of Saeki in view of Dekura in view of Parker et al. in further view of Watanabe et al. (US Patent No. 5,023,394).

Referring to claims 6 and 15, Fairweather in view of Saeki in view of Dekura in view of Parker et al. teach all of the features of the above claim except they do not teach the temperature range for the electroless coating of Ni onto the substrate. However, Watanabe et al. teaches that electroless plating of Ni can be performed at 35-38 degrees Celsius (column 5 lines 25-29). Accordingly it would have been obvious to one of ordinary skill in the art that it would have been possible to perform the method of Fairweather in view of Saeki in view of Dekura in view of Parker et al. at the temperature of Watanabe et al. with a reasonable expectation of successfully forming the film, especially in the absence of a showing of criticality for using the claimed ranges.

### ***Conclusion***

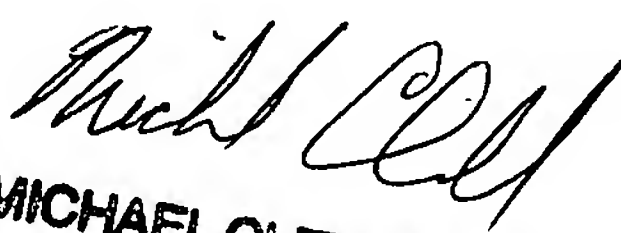
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard E. Abramowitz whose telephone number is 571-272-8557. The examiner can normally be reached on monday-friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MICHAEL CLEVELAND  
PRIMARY EXAMINER